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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,982	02/18/2005	Rudolf Heinrich Brzesowsky	MDPCT0330US	5592

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EXAMINER	
ELVE, MARIA ALEXANDRA	
ART UNIT	**PAPER NUMBER**
3742	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/524,982	BRZESOWSKY ET AL.	
	Examiner	Art Unit	
	M. Alexandra Elve	3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 June 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 February 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 6, 8, 10-11, 13-15, 17 & 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoekstra et al. (USPN 6,211,488) in view of Bookbinder et al. (USPN 6,673,752).

Hoekstra et al. discloses:

A focal point of the laser beam starts at the end of the substrate. The laser beam heats up the substrate.

…method for physically separating non-metallic substrates forms a microcrack in the substrate and controllingly propagates the microcrack… pulsed laser scribing device forms a microcrack in the substrate… A scribe beam is applied onto the substrate on a separation line. A coolant stream intersects with, or is adjacent to, the trailing edge of the scribe beam. (abstract)

One preferred application for this … method is for separating glass substrates. However, this apparatus and method may be useful for dividing other types of non-metallic brittle substrates such as quartz, quartz glass, ceramics, silicon, sapphire, and various other electronic and optical materials. (col. 4, lines 20-25)

As shown in FIGS. 3 and 5, the beam producing and quenching device 26 produces a scribe beam 42, a quenching stream 44 of gas and/or fluid, and breaking beams 46 and 48. The splitting device 20 is moved relative to the table 10 and substrate 4 so

(a) the scribe beam 42 heats the substrate 4, from the initial microcrack formed by the scribe initiation device 24, along the separation line 45, (b) the quenching stream 44 removes the heat from the substrate 4 along the separation line 45, hereby thermally shocking the substrate 4 in that region and propagating the microcrack along the separation line 45, and (c) the break beams 46 and 48 heat the regions on both sides of the microcrack to create tensile forces to that are sufficient to separate the substrate 4 along the separation line 45 from the microcrack to the bottom surface. (col. 6, lines 35-50)

For example, break beams 46 and 48 in this configuration can help control the onset of tensile forces during the breaks step. (col. 8, lines 55-57)

The quenching stream 44 removes energy or "cools" the substrate heated by the scribe beam 42. (col. 9, lines 59-61)

In a preferred embodiment, the quenching stream 44 is a stream of helium gas. Accordingly, the source 104 contains pressurized helium gas. Helium gas is desirable because it has a high heat capacity and is thus efficient at removing the heat from the substrate 4. Other types of pressurized gas such as nitrogen, CO.sub.2 and argon may also be used. Pressurized air may also be used. As an alternative to using pressurized gas only, a mixture of pressurized
gas and water may be supplied to a valve from separate sources and discharged together through the nozzle 102. (col. 10, lines 12-22)

If desired, a mechanical force applicator can be used to apply a bending moment to the substrate 4 about an axis defined by the separation line 45. This creates an induced mechanical strain field and facilitates the breaking
process. As the substrate should preferably separate into distinct pieces upon the completion of a single pass of the splitting device, use of a mechanical force applicator can help achieve single pass separation. A mechanical force applicator may be preferred if the substrate 4 to be separated is large. (col. 10, lines 50-58)

Hoekstra et al. does not teach a surfactant (cationic, nonionic or anionic) or the surfactant concentration.

Bookbinder et al. discloses:

…invention relates to organic cutting fluids that can facilitate the abrading, cutting or machining of vitreous, crystalline, or aggregate materials… (col. 1, lines 13-15)

…a cutting fluid can also function as a coolant for the cutting or grinding tool. (col. 1, lines 37-39)

…cutting fluids used to date have fallen into four general categories of… surfactant solutions… The cutting fluid formulations in the first three categories, which require surfactants, traditionally use anionic or non-ionic surface-active agents for reducing surface tension, supplying lubricity and emulsifying oil content. The cationic fluids found in the fourth general category…
(col. 1, lines 40-54)

A cutting fluid applicable for the machining of vitreous, crystalline or aggregate materials such as glass, glass-ceramics, ceramics, stone, concrete, silicon and the like. The cutting fluid comprises a solution… (abstract)
The cutting and grinding wheels are used typically for cutting or finishing workpieces, such as a planar sheet of glass or silicon wafer, or molded shapes of glass-ceramics, Corian.RTM. by DuPont or even stone such as granite, marble, or limestone. (col. 8, lines 50-54)

The cutting fluid is prepared with commercially available organic molecules in a detergent suspension to about a 10% weight concentration in water, and diluted to about 0.1-1.0% when used. (col. 7, lines 25-28)

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the surfactants (cationic, nonionic or anionic) and the surfactant

concentration (0.1 to 1.0%) as taught by Bookbinder et al. in the Hoekstra et al. process because coolants and cutting fluids function as one and the same (i.e. interchangeable). Furthermore, both Bookbinder et al. and Hoekstra et al. are directed to the machining of brittle materials.

The exact amounts of each of the constituents as presently claimed are not disclosed in the prior art, however, the prior art compositions closely approximate or overlap applicant's claimed composition. It has been held that one of ordinary skill in the art at the time of the invention would have considered the claimed compositions to have been obvious because close approximation or overlapping ranges in a composition is considered to establish a prima facie case of obviousness. See In re Malagari, 182 USPQ 549, Titanium Metals v. Banner 227 USPQ 773, In re Nehrenberg 126 USPQ 383.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoekstra et al. and Bookbinder et al., as stated above and further in view of Roscheisen et al. (USPN 7,253,017).

Hoekstra et al. discloses the laser separation of non-metallic brittle substrates such as quartz, quartz glass, ceramics, silicon, sapphire and various other electronic and optical materials, however, siloxane is not specifically taught. In addition a siloxane-surfactant bond is not taught.

Roscheisen discloses an optoelectronic device which uses siloxane and surfactant. The siloxane and surfactant form a "layer" in the optoelectronic device. Additionally, the device may be subjected to laser scribing, grooving and so forth.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use siloxane and surfactant as taught by Roscheisen in the Hoekstra et al. and Bookbinder et al. process because this is merely a type of electronic and/or optical material.

Claims 5, 7, 9, 16, 18 & 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoekstra et al. and Bookbinder et al., as stated above and further in view of Iwata et al. (USPN 5,565,363).

Hoekstra et al. discloses an aqueous/gas mixture coolant and Bookbinder et al. teaches surfactants (cationic, nonionic or anionic) with surfactant concentrations ranging from 0.1 to 1.0%. Examples of surfactant of instant claims are not taught.

Iwata et al. discloses

> Examples of the surfactant are anionic surfactants, cationic surfactants, amphoteric surfactant, and nonionic surfactants. (col. 4, lines 57-58)

> Examples of **anionic** surfactants are higher alcohol sulfonates or sulfates, e.g. sodium dodecylsulfate (SDS), lithium dodecylsulfate, sodium dodecylbenzenesulfonate **(SDBS)**, sodium 1-dodecanesulfonate, sodium diisooctylsulfosuccinate (SDOSS), sodium octylsulfate, etc. (col. 4, lines 59-63)

Note SDBS is dodecylbenzene sulfonic acid sodium salt (chemical registry # 25155-30-0).

Examples of **cationic** surfactants are quaternary ammonium salts containing one or more alkyl groups having 7 or more carbon atoms, usually 30 or less carbon atoms, for example, myristyltrimethylammonium bromide (MTAB), **cetyltrimethylammonium bromide (CTAB)**, octadecyltrimethylammonium chloride, dodecyltrimethylammonium chloride, cetyltrimethylammonium chloride, lauryltrimethylammonium chloride, etc.; quaternary ammonium salts having a phenyl group such as benzalconium chloride, tetradecyldimethylbenzylammonium chloride, octadecyldimethylbenzylammonium chloride, lauryldimethylbenzylammonium chloride, etc.; quaternary ammonium salts having a pyridyl group such as laurylpyridinium chloride, cetylpyridinium chloride stearylamidomethylpyridinium chloride etc. (col. 4, lines 66-67 & col. 5, lines 1-13)

Note CTAB is cetyl trimethyl ammonium bromide (chemical registry # 57-09-0).

Examples of nonionic surfactants are polyoxyethylene alkyl phenyl ethers such as polyoxyethylene (8) octyl phenyl ether, polyoxyethylene (10) octyl phenyl ether, etc; polyoxyethylene alkyl esters such as polyoxyethylene (20) sorbitane monolaurate, polyoxyethylene sorbitane monooleate, polyoxyethylene sorbitane monopalmitate, polyoxyethylene sorbitane monostearate, polyoxyethylene sorbitane trioleate, etc.

Note octadecyl deca(ethyleenoxide) hydroxide (appears to have registry # 13149-86-5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the surfactants as disclosed by Iwata et al. in the Hoekstra et al. and Bookbinder et al. process because these are merely specific examples of surfactants;

the presence of which are required by Hoekstra et al. and Bookbinder et al. The types of materials chosen are a choice in design and substitutions of known equivalent structures may be used. In re Kuhle 188 USPQ (CCPA 1975), In re Ruff 118 USPQ 343 (CCPA 1958).

Response to Arguments

Applicant's arguments filed 6/4/09 have been fully considered but they are not persuasive.

Applicant argues that Hoekstra et al. crack is only within the substrate. The examiner respectfully notes that upon application of coolant the Hoekstra et al. crack extends and the substrate is fully separated.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Hoekstra et al. uses a liquid coolant for laser machining, that is, laser separation of a substrate. Bookbinder et al. discloses the use of machining fluids such as surfactants (cationic, nonionic or anionic) for the separation of vitreous or crystalline materials.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See US PTO-892.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Alexandra Elve whose telephone number is 571-272-1173. The examiner can normally be reached on 7:30-4:00 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu B. Hoang can be reached on 571-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

August 30, 2009.

/M. Alexandra Elve/
Primary Examiner, Art Unit 3742